PRICE 15¢

PERIODICAL ROOM
GENERAL LIBRARY
UNIV. OF MICH.

MAY 4 1937

SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE •

May 1, 1937

Gives Appetite

See Page 277

A SCIENCE SERVICE PUBLICATION

SCIENCE NEWS LETTER

Vol. XXXI *No. 838*

The Weekly Summary of

Current Science

Published Every Saturday by

SCIENCE SERVICE

2101 Constitution Avenue
Washington, D. C.

THE INSTITUTION FOR THE POPULARIZATION OF SCIENCE organized 1921 as a non-profit corporation, with trustees nominated by the National Academy of Sciences, the National Research Council, the American Association for the Advancement of Science, the E. W. Scripps Estate and the journalistic profession.

Edited by WATSON DAVIS

Subscription rates—$5.00 a year postpaid; two years $7.00; 15 cents a copy. Ten or more copies to same address, 5 cents a copy. Back numbers more than six months old, 25 cents.

Canadian subscribers please add 50 cents a year, foreign subscribers 75 cents a year to regular subscription rate to cover postage.

Members of the American Association for the Advancement of Science have the privilege of subscribing to SCIENCE NEWS LETTER at the reduced price of $3 per year. Application for this privilege should be accompanied by privilege card obtained from the Permanent Secretary, A.A.A.S., Smithsonian Institution Building, Washington, D. C.

In requesting change of address, please give your old address as well as the new one in notification to Circulation Department, SCIENCE NEWS LETTER, 2101 Constitution Ave., Washington, D. C., at least two weeks before change is to become effective.

Copyright, 1937, by Science Service, Inc. Republication of any portion of the SCIENCE NEWS LETTER is strictly prohibited. Newspapers, magazines and other publications are invited to avail themselves of the numerous syndicate services issued by Science Service.

Cable address: Scienserve, Washington.

Entered as second class matter at the post-office at Washington, D. C., under the act of March 3, 1879. Established in mimeographed form March 13, 1922. Title registered as trademark, U. S. and Canadian Patent Offices.

Advertising rates furnished on application. Member Audit Bureau of Circulations.

Board of Trustees of Science Service

Honorary President, William E. Ritter, University of California; *Honorary Vice-President*, Vernon Kellogg, National Research Council. Representing the American Association for the Advancement of Science, J. McKeen Cattell, *President*, Editor, Science, Garrison, N. Y.; Burton E. Livingston, Johns Hopkins University, Baltimore, Md.; Henry B. Ward, Permanent Secretary, A.A.A.S. Representing the National Academy of Sciences, W. H. Howell, *Vice-President and Chairman of Executive Committee*, Johns Hopkins University, Baltimore, Md.; R. A. Millikan, Director, Norman Bridge Laboratory of Physics, California Institute of Technology, Pasadena, Calif.; Harlow Shapley, Director, Harvard College Observatory, Cambridge, Mass. Representing National Research Council, Ludvig Hektoen, John McCormick Institute for Infectious Diseases, Chicago, Ill.; C. G. Abbot, Secretary, Smithsonian Institution, Washington, D. C.; Harrison E. Howe Editor of Industrial and Engineering Chemistry, Washington, D. C. Representing Journalistic Profession, John H. Finley, Associate Editor, New York Times; Mark Sullivan, Writer, Washington, D. C.; Representing E. W. Scripps Estate, Harry L. Smithton, *Treasurer*, Cincinnati, Ohio; Robert P. Scripps, Scripps-Howard Newspapers, West Chester, Ohio; Warren S. Thompson, Miami University, Oxford, Ohio.

Staff of Science Service

Director, Watson Davis; Staff Writers: Frank Thone, Emily C. Davis, Jane Stafford, Marjorie Van de Water, Robert Potter; Astronomy writer, James Stokley. Correspondents in principal cities and centers of research. Librarian, Minna Gill; Sales and Advertising Manager, Hallie Jenkins.

DO YOU KNOW?

An electric coal picker has been devised in England.

More than 10,000 species of grasses have been discovered.

In dry weather deep soil shrinks, in wet weather it expands.

A pipeless organ has been invented in Germany, using photoelectric cells and sound wave photographs to produce tones.

The National Bureau of Standards has been studying traffic paint for ten years, and its work has helped make such paints more durable.

A species of bamboo that is blooming this year in Florida is known to bloom in its native Asiatic home at intervals of from 25 to 50 years.

In Norway, a chauffeur, truck driver, or other professional automobile driver may not take any alcoholic drink while driving or within eight hours before.

Comparatively few Indians make their entire living by weaving rugs, doing beadwork, or other crafts; farming and cattle raising are mainstays of most Indian groups.

Volcanoes sometimes erupt under ice-sheets in Iceland.

Dust can be completely removed from gravel roads by special machinery.

A lizard was once found entombed in amber, but two frogs in amber have been pronounced forgeries.

Vikings may have fashioned their swords and plowshares out of meteoric iron that fell from the sky, is the theory of an astronomer.

About one wild rabbit in a hundred is infected with the dangerous germ of the disease tularemia or rabbit fever, which can be transmitted to man.

The idea of damming the Thames river to give London an airport alarms one health official, who fears a stagnant pool would form in dry summers.

Government scientists have found two rootstocks for peaches that will resist the root-knot disease of peach trees in the South and Southwest.

Recent experiments show that if sheets are ironed from selvage to selvage the sheet may gain 3 or 4 per cent, in width, and at the same time become shorter.

WITH THE SCIENCES THIS WEEK

Most articles are based on communications to Science Service or papers before meetings, but where published sources are used they are referred to in the article.

ANTHROPOMETRY

Why do age sizes of children's clothes mean so little? p. 278.

BACTERIOLOGY

What do germs like to eat? p. 279.

BIOLOGY

How can the very instant of beginning life be detected? p. 282.

How might epileptic attacks be prevented? p. 282.

Is the cause for angina pectoris known? p. 282.

Can a tadpole have eyes in its tail? p. 281.

GENERAL SCIENCE

Did ocean creatures once live where the Appalachian mountains now rise? p. 276.

Is scrap iron found in the blood? p. 275.

What effect does eating sugar have on the person drinking alcohol? p. 275.

Why might "hurry-up" water be an appropriate name for heavy water? p. 275.

MEDICINE

What new weapon has been found to combat meningitis? p. 280.

Where is a new mass attack against cancer being launched? p. 284.

NUTRITION

Do New Yorkers eat enough meat? p. 280.

PALEONTOLOGY

For how long has life been on the earth? p. 281.

PHOTOGRAPHY

How has a photographic flash bulb been made to light more than once? p. 280.

PHOTOGRAPHY-NUTRITION

What does vitamin B_1 look like? p. 277.

PHYSIOLOGY

How can time be enlarged? p. 281.

PSYCHOLOGY

What pattern is followed by the cells of the human body? p. 284.

PUBLIC HEALTH

Why has yellow fever become a menace to health in the United States? p. 278.

GENERAL SCIENCE

Sugar in Blood Protects Against Poison of Alcohol

Spring Meeting of National Academy of Sciences Reviews Topics From Atoms to Mountain Peaks

CHAMPION "Old Soaks," in the days when the West was wild, used to gulp down a lot of olive oil before settling down to an evening of serious drinking. They might have done better had they raided the candy counter instead, it is indicated by recent physiological researches on the effects of alcohol and what to do about them, reported by Drs. Howard W. Haggard and Leon A. Greenberg of Yale University, before the National Academy of Sciences at Washington, D. C.

The intoxicating effect of alcohol on the brain is powerfully counteracted by the amount of sugar in the blood, the two Yale researchers found. The concentration of alcohol needed to kill a rat with one-tenth of one per cent. of sugar in its blood is more than 20 per cent. higher than the concentration needed to kill when the blood sugar has been reduced to seven hundredths of one per cent. But if the blood sugar is raised to two tenths of one per cent., the alcohol needed to kill must be increased by 60 per cent.

There is a limit to the protective action of sugar, however. Drs. Haggard and Greenberg artificially raised the rats' blood sugar to concentrations impossible to attain in any natural manner, but found that these did not increase the protective action.

The two physiologists stated: "Our investigation has been made chiefly on rats, but we have evidence that men react similarly."

The Blood's Scrap Iron

Scrap iron, which has suddenly moved from the junkpile to the page one news of a war-worried world, is important also in the upkeep of the blood that flows in our arteries and veins. Scientists attending the meeting of the National Academy of Sciences heard the story of our internal scrap iron from Prof. G. H. Whipple of the University of Rochester.

When red blood cells wear out, said Prof. Whipple, they break down into three kinds of "scrap": iron, a pigment called hemin, and a protein molecule called globin. The iron is carefully stored for future use. The hemin is thrown away—discharged as bile pigment into the intestine. The big protein blocks of globin are probably used again in the building of new hemoglobin for the new blood, but we do not understand the mechanism of this at all well as yet.

The liver and the red marrow of our bones are the chief manufacturing plants of new red blood cells, continued Prof. Whipple: "We may imagine that the liver produces the building blocks or chemical aggregates and the bone marrow acts as the 'assembly line' from which roll the finished red cells packed with hemoglobin."

From experiments on new blood formation in dogs, Prof. Whipple has found that best of all foodstuffs for the purpose are animal "giblets," especially liver, kidney, pancreas, and stomach (tripe, to the trade). Green vegetables occupy an intermediate position. Some fruits are good, others of little value. Grains and dairy products, despite their high usefulness in other respects, are poor in the factors which cause new hemoglobin production in anemia.

"Hurry-up" Water

"Heavy" water, that is, water containing double-weight atoms of hydrogen, or deuterium, instead of ordinary light-weight hydrogen, might well be rechristened "hurry-up" water, from its physiological effects. These were described by Dr. Henry Gray Barbour of Yale Medical School.

Substitute "heavy" water for half the natural water in a mouse's body, and the mouse dies, Dr. Barbour said. The animal can, however, survive the substitution of one-fifth of its bodily water content with "heavy" water, he said, though only at the price of rather severe physiological disturbances.

In general, these effects are like those produced by strong stimulation of those

STONE AGE CITY

No longer can Stone Age men be regarded one and all as benighted primitives. Evidence that they rose to the proud estate of city folks has been unearthed in a thirteenth layer of ruins at "the world's oldest city," Tepe Gawra, in Mesopotamia. Prof. A. E. Speiser, unearthing these city buildings over 6000 years old, reports to Prof. Millar Burrows of Yale that people still in the Stone Age built an acropolis, with awe-inspiring temples around a court, and dwellings on the remaining side of the enclosure. He calls these ruins the earliest known example of monumental architecture. The expedition is a joint project of the American Schools of Oriental Research, University of Pennsylvania and Dropsie College.

nerves known as the sympathetic nervous system. The rate of physiological processes is speeded up by 20 per cent. or more, and the body temperature usually rises. The hair stands on end, the eyes pop out—in general, the mouse gives every appearance of having been "pepped up" too much.

The whole complex of effects can be reversed, and the mouse quieted into a state of apparent normalcy by the administration of the drug ergotoxine, which is specifically depressant to the sympathetic nervous system.

Heights Once Abysses

Where now the Appalachian mountain system raises its tree-clad peaks and ridges, there was once a tremendous abysmal ocean trough.

Evidence in support of this thesis was presented by Dr. Rudolf Ruedemann of the New York State Museum.

Great masses of rocks in the Appalachian region now contain as their principal fossils the skeletons of one-celled animals laid down hundreds of millions of years ago. Yet the same species are alive today, found only in ocean depths of 12,000 feet or more.

There is no reason to suppose that these extremely conservative species have changed their ways in all that time, so it is only logical to suppose that the present mountains were once submerged in the sea to several times their present heights above sea level.

The Fatter the Hotter

Popular impression that fat folks are warmer than thin ones received quantitative scientific backing in a report submitted by Drs. F. G. Benedict and R. C. Lee, of the Nutrition Laboratory, in Boston, of the Carnegie Institution of Washington.

Drs. Benedict and Lee worked with geese and mice rather than with men, but presumably their findings should hold good in a general way for our own species. The fatter the goose the more body heat it gave off, they found. The amount of heat produced per pound of weight was about the same for fat geese as for thin ones, so that the total amount of heat given off was approximately proportional to the size of the bird.

With mice it was much the same story. The two physiologists used three sizes of mice: an ordinary white mouse weighing about two-thirds of an ounce, a giant fat mouse weighing two ounces, and a midget mouse weighing only a trifle over a quarter of an ounce. The fat mouse proved the most effective small animal furnace of the three.

Spacing of Atoms

From interstellar immensities of space, where distances are measured in millions of light-years, to the infinitesimally minute distances between atomic nuclei in molecules, is the scientific leap that has been made at the Mount Wilson Observatory of the Carnegie Institution of Washington. Dr. Harold D. Babcock, physicist, told the Academy about it.

The distance apart of the nuclei of oxygen atoms has been inferred from the distances apart of the bright lines caused by glowing oxygen in a spectrograph. They are of the order of a hundredth of a millionth of a centimeter. A centimeter is less than half an inch.

If the internuclear distance varies by as little as a millionth of a millionth of a centimeter, the instrument can detect the change. It might be likened to the astronomer's ability to detect the "perturbations" of a planet millions of miles away, when it swings a fraction of a second of arc off its predicted course.

Automotive Crystals

Crystals that move under their own power, giving a curious illusion of being "alive" were demonstrated in motion pictures by Prof. R. W. Wood of the Johns Hopkins University.

The crystals are of a relatively little studied substance, protocatechuic acid. The phenomenon of these moving crystals was first noticed in 1888 by a chemist named Otto Lehman, and then apparently quite lost sight of.

Under certain conditions, the crystals develop in the form of branched rods like the claws of a lobster. The joints straighten out by a progressive motion of the sharp angle of bend, which in one or two seconds runs along the crystal to the tip, the bent rod becoming straight.

Large clusters of these crystals sometimes form, and there is constant movement of the "colony" as the bent rods straighten out and the finger-like tips come together and fuse.

Sleepers' Brain Waves

Brain waves, the rapidly fluctuating electrical potentials that can be detected by delicate electrical apparatus through skull and scalp, can be used to tell something of the mental state of a person while asleep. Experiments in this field were reported by Prof. E. Newton Harvey of Princeton University, and Dr. Alfred L. Loomis and Garrett A. Hobart III of the Loomis Laboratory at Tuxedo Park, N. Y.

Persons whose brain waves are predominantly of the "alpha" type (ten per second) pass through four stages as sleep becomes deeper and deeper: (1) more

GIANT HOISTING CRANE

The large structure at the center will lift 270 tons. It is one of the largest of its kind and was used to place huge parts in the hydro-electric turbine equipment at Wheeler Dam, part of the TVA project.

and more marked interruption of the alpha rhythm, (2) its complete disappearance, (3) large random waves, (4) random waves plus bursts of 14-per-second waves.

One subject who fell asleep while trying to carry out a set of instructions as he lay on the couch was awakened by the slamming of a door. Just before he became evidently awake his normal "alpha" brain-rhythms reappeared on the record. For at least this type of person, the experimenters stated, they have become able easily to distinguish the states of sleep.

Breathing While Reading

Did you ever try to talk or sing with your head inside a bucket?

That is what volunteers did in the psychological laboratory of Prof. Walter R. Miles of Yale University.

The subjects' heads were not exactly in a bucket, but in a roomy metal helmet with a closely-fitting but comfortable thin rubber collar around the neck, so that their breathing rates could be measured.

Contrary to what might be expected, the persons tested breathed more rapidly when they were resting than when they were reading aloud or singing. The less frequent breathing during such activities, however, tended to be deeper, and there was a larger storage of reserve air. The reserve is restored to normal level when the resting phase is resumed.

Science News Letter, May 1, 1937

PHOTOGRAPHY-NUTRITION

Obtain Rare Photograph Of Vitamin B_1 Crystals

See Front Cover

DID you ever see a vitamin?

Of course, they don't really look like the alphabet letters in soup, but did you picture them in your mind as anything like the one shown on the cover of this week's SCIENCE NEWS LETTER?

In that rare photograph is shown vitamin B_1, the one found in whole cereals, green vegetables, fruit, milk and yeast, lack of which causes nervous and intestinal malfunctions, loss of appetite and weight.

The picture was taken by Professors W. A. Hynes and Leo Yanowski, of Fordham University's chemistry department. It was taken with a two-minute exposure by reflected light at a magnification of 20 diameters.

Science News Letter, May 1, 1937

GENERAL SCIENCE

Chimpanzee Is New Ally In Attack on Drug Problem

Philosophical Society Hears Reports Also on Why Chinese Are Calm; New Findings on Heredity

DRUG addiction is not limited to human beings. Sub-human animals can become "dope fiends," too, Drs. Robert M. Yerkes and S. D. Spragg of Yale University reported before the meeting of the American Philosophical Society at Philadelphia.

Drs. Yerkes and Spragg first trained a number of chimpanzees to submit, wholly voluntarily, to hypodermic injections and a number of physical manipulations. Measurements of physical and psychological reactions in the undrugged, pre-addiction stage were then made.

After this, the apes were given injections of morphine, and its effects on their bodily and mental reactions checked against those of their normal state.

One of the animals became a real addict. It would seek the drug injection before it was offered, and if given the choice between food and the needle, would choose the latter.

"It is believed," Dr. Yerkes stated, "that this is the first instance to be reported in which a pronounced desire for morphine, indicated by striving for the injection, has been convincingly demonstrated in an infrahuman animal."

Placid Races

Chinese calm, the placidity of the women of India, is partly a matter of lower life fires, of a slower burning of food into energy, Dr. Francis G. Benedict of the Carnegie Institution of Washington reported.

Studies on representative members of various races, quite literally "ranged through the world from China to Peru," have been made by physiologists trained in the study technique developed in Dr. Benedict's laboratories in Boston. A collation of their results shows that metabolism, or production of body-energy, is to a large extent a matter of race.

Oriental races in general, it was found, have a metabolism rate lower than that of Caucasians in the United States. The South Indian women of Madras have a very much lower rate—17 per cent. below the Caucasian prediction standards—and this is further depressed about ten per cent. during deep sleep.

A striking exception to the generally low metabolism rate in the Orient was found in 24 men of the Miao race in Szechuan, in interior China. These individuals showed a metabolism rate 16 per cent. higher than the Caucasian prediction standards. Yet their pulse rate was decidedly slow—55 beats per minute as compared with an average of 75 for Caucasians.

High metabolism rates prevail for American Indians of the Maya and Chilean regions, other investigators found.

Predestination in Noses

Babies' noses are merely comic to most persons, but to Dr. Charles B. Davenport, formerly director of the Carnegie Institution's Department of Genetics, they already bear signs of the ultimate fate of the infant's face. He reported to the meeting his measurements of many hundreds of infantile noses, and their subsequent developments.

Noses are pretty much predestined to the shapes they will finally have, even before we are born, Dr. Davenport indicated. Like everything else about us, their fate is ruled by hereditary units, the genes.

Where the gene complex of two noses is the same, as in identical twins, the result is practical identity of the nose form. Differences in genes, by family or race, will show up in characteristic family or race noses.

In some infants the eventual shape of the nose is foreshadowed pretty plainly at birth. In others, however, there are differences in rate of growth of different parts that bring about very marked changes as the child grows up.

Riddle in Heredity

Like does not always beget like, Prof. George H. Shull, veteran Princeton University geneticist, has found in his breeding experiments with the widely distributed little wild plant known as shepherd's purse. He reported a genetical riddle to the Philosophical Society.

A yellow-green plant appeared among

the offspring of one crossing of green-leaved parents. Bred further, the yellow-green color persisted through several generations, yet when the new strain was inbred it never produced uniform offspring of its own kind—there was always a mixture of fully green-leaved plants, and in larger proportion than Mendel's law affords.

A similarly anomalous genetical behavior was once observed in the case of a strain of yellow mice, that could not produce wholly yellow families.

Science News Letter, May 1, 1937

PUBLIC HEALTH

Health Authorities Fight New Yellow Fever Threat

FIVE steps to be taken immediately to fight off the yellow fever menace which now threatens the country were advocated by the Conference of State and Territorial Health Officers with the U. S. Public Health Service.

A national law prohibiting the establishment or maintenance of airports of entry within 20 miles of any community in which the yellow fever mosquito is prevalent is one of the measures recommended to fight the yellow fever menace which threatens because air travel is bringing yellow fever infested regions of South America dangerously near to this country.

In addition to this measure the federal health service was urged to develop detailed procedure for immediately controlling yellow fever in a community and preventing its spread upon discovery of a single case.

Other steps to be taken include eradication of the yellow fever mosquito from communities adjacent to airports and withholding permits for airports of entry from communities in infectible territory unless the adjacent communities institute adequate measures to control the yellow fever mosquito.

Immediate action was urged upon the conference by Surgeon General Thomas Parran.

Science News Letter, May 1, 1937

A Japanese physician has taken X-ray sound moving pictures of heart and lungs in both healthy and sick persons.

A bronze plaque discovered at San Francisco Bay appears to be a record that Sir Francis Drake left there in 1579, and if proved true this would show that the bay was discovered by Drake, not by Portola in 1769.

PUTTING STRAIN ON CLOTHES

A boy may stand soldier-straight to have his new suit fitted. But in the real business of play he bends and twists, and clothes have to keep up with him—or else.

ANTHROPOMETRY

To Measure 100,000 Children For Correct Clothing Sizes

Home Economics Bureau Experts Plan Survey To Show How Children Actually Fill Out Clothes During Wear

By EMILY C. DAVIS

ARE children big for their age?

It sounds ridiculous. But listen to proud parents talking about Mary, who is so big for her age she wears six-year-old dresses, though she is just four. And Dicky—he lives next door to Mary—he's big for his age, too. He wears seven-year-old suits, imagine that, though he won't be five till June! If you went down Mary's street, and knocked at all the doors, you would find a lot more of these youngsters who are "big for their age."

How big are children, anyway?

To get an answer to this question, especially in its relation to the clothes problem, 100,000 American children are to be scientifically measured. For the first time a cross-section of America's childhood will be measured, not merely for height, but for about 40 traits.

The reason why many children wear clothes so much beyond their age is that manufacturers of clothing do not know how big American children are, in their real and exact proportions. Manufacturers do have sets of statistics on which they base clothing sizes. But many of these are kept secret, and there is no uniformity among different companies. Skimp cutting—saving material here and there by making garments skimpy—is resorted to by some manufacturers.

A bewildered mother finds her Alice-in-Wonderland child, aged nine, may be size ten in one store, size nine in another, and in still another may prove so "big" she has grown right out of the depart

ment for younger children, and has to be fitted in older sizes.

The new project is to measure normal children aged one to 14 years, in eight different states, and to measure children that come from three levels of economic home life, and children with different racial heritages from the American melting pot.

The project has never been attempted before, says Miss Ruth O'Brien, textile and clothing specialist of the Bureau of Home Economics, U. S. Department of Agriculture, because it is such a huge task, requiring careful organization.

Now it is started, with the Bureau of Home Economics leading the work, in cooperation with institutions in the eight states, and with young people from the National Youth Administration to help in the big fact-and-figure gathering task.

Conferences

At the Bureau of Home Economics, in Washington, D. C., conferences are being held with representatives of the clothing and pattern industries, and with state institutions that have so far lined up for the work.

Six states represented at a recent conference show the variety of these institutions — colleges, experiment stations, child research agencies:

Iowa — Iowa Child Welfare Research Station, State University of Iowa.

New York—Vassar College.

Pennsylvania—Pennsylvania State College.

Kansas—Kansas State College of Agriculture and Applied Science.

Texas—Agricultural Experiment Station, Agricultural and Mechanical College of Texas.

Minnesota — College of Home Economics, University of Minnesota.

The Division of Home Economics of Iowa State College may also take part.

Knees and Elbows

Measurements that will be most useful are now being decided. They will include such figures as waist circumference, knee circumference, shoulder length, slope of shoulder, arm length.

To show what amount of "give" a garment should have for comfort on a lively child, the children will be measured from waist to back of knee while bending forward. Children will also be told to bend one arm akimbo, so that the difference between the straight and bent arm for sleeve purposes can be determined.

All the measurements will be taken with scientific tools (*Turn to Page 286*)

MEASURING A BEND

Dr. Eleanor Hunt, anthropometrist, runs her tape line from waist to back of knee in a position showing the amount of give a boy's garments may need. This measurement is particularly useful to bathing-suit and underwear makers.

BACTERIOLOGY

Making Diets for Germs Is Complicated Task

THE housewife, suddenly called upon in illness to provide a special diet for some member of her family, thinks she has a difficult job on her hands. Playing dietitian to bacteria is even more of a task. Yet it must be accomplished if scientists are to keep bacteria growing in laboratories for research. These single-celled organisms, many of which make trouble by causing serious diseases, are too small to see without a microscope.

Being made up of only one cell, they are generally regarded as very simple, primitive forms of life. There is nothing simple about their dietary requirements, however. In fact, so fastidious are they that many of them can be identified by the particular kinds of food they require for growth.

Among the indispensable elements in the diet of bacteria are carbon, nitrogen, hydrogen, oxygen and phosphorus. These are the meat and potatoes, so to speak, of bacterial diet. In addition, bacteria require small traces of other substances, such as iron, magnesium, cadmium, manganese, potassium and calcium.

Like humans, bacteria also require vitamins. Yeast, for example, could not be made to grow on synthetic media without the vitamin called bios. More recently, it has been found that a substance called pantothenic acid is active in stimulating the growth of yeast. The diphtheria bacillus requires foodstuff of a vitamin-like character found in meat extract. A substance from molasses acts like a vitamin in the diet of legume nodule bacteria.

Some bacteria can build new tissue from raw material without outside aid, but other bacteria apparently need some ready-prepared foods in their diet. The amino acids, which are the building stones of the protein molecule, are one example of the sort of ready-prepared food required by some bacteria. They are also essential in the diet of man, but while the same amino acids are essential in the diet of all humans, different bacteria have different requirements in this respect also.

Science News Letter, May 1, 1937

The London public can check the accuracy of a ruler or tape line or measuring chain by going to Trafalgar Square and fitting the measure to standards of length marked in bronze on a wall there.

PHOTOGRAPHY

Photoflash Bulb Can Be Used Many Times

A NEW photographic flash lamp which can be used over and over again is under development at the Lamp Laboratories of the Westinghouse Electric and Manufacturing Company. A flash of a mercury arc in a small bulb only six inches long and a little over an inch in diameter floods the scene to be photographed with a light intensity of 500,000 lumens. The same lamp can be operated continuously on 100 watts while the studio scene is being prepared and then the lamp flashed to its great brilliance during the actual exposure of the film. The characteristic green-blue rays from the mercury arc affect photographic film much more strongly than ordinary rays from an electric lamp.

Science News Letter, May 1, 1937

NUTRITION

Americans Do Not Eat Enough Protein Foods

IF 1,000 New Yorkers are at all typical of the nation's food habits, we don't by any means eat enough protein foods. Meat, fish, eggs and cheese are the chief protein foods. (*Journal American Medical Association,* April 3).

Our general health would be better and we would be mentally and physically more efficient if we consumed more protein in our daily diet.

Drs. Benjamin I. Ashe and Hermon O. Mosenthal have over a long period of years been studying normal, apparently healthy persons who have reported to them for health examinations.

By analyzing the 24-hour specimens of urine of these normal persons they have arrived at the protein, salt and fluid intake of 1,000 residents of New York City.

Various workers in nutrition state that the suitable daily protein intake is from 75 to 100 grams. The so-called minimal intake is set at 45 grams. In more familiar terms, this minimal intake is a little over an ounce, since 28.3 grams are the equivalent of one ounce. One hundred grams is less than a quarter of a pound.

Doctors Ashe and Mosenthal were surprised to find that of their 1,000 New Yorkers 61 per cent. ate only 42 grams or even less protein a day. Only 40 persons of the 1,000 ate 75 grams or more protein daily.

"Nutritional" edema, fatigue, anemia, cloudy swelling of vital organs, lack of resistance to infection, pellagra and other ill effects have been cited by authorities as caused by low protein ration.

Women were the chief offenders in the matter of low protein intake. Low and low-normal blood pressure readings were encountered frequently among this group, yet the high protein eater did not have high blood pressure, these doctors found.

Underweight occurs frequently among the low protein group. Mild secondary anemia is common.

Among those who were high protein eaters there were more men. The blood pressure was not high, the weight was average (rarely any overweight) and there was rarely any anemia.

The "low salt" eaters were chiefly women; "high salt" eaters chiefly men.

These physicians conclude that persons with high blood pressure do not habitually eat more protein or more salt than normal persons eat. They find no evidence that a low protein diet will materially reduce hypertension provided there is no anemia.

Science News Letter, May 1, 1937

PALEONTOLOGY

Rich Find of Fossils Made In Brazil

A RICH new bed of 175,000,000-year-old fossils, which has already yielded several previously unknown reptiles and significant facts concerning the origin of dinosaurs and modern mammals, has been discovered in southern Brazil. It is believed to be the most important American deposit ever found representing the Triassic period, nearly 200,000,000 years ago, when the first reptile forerunners of the dinosaurs and mammals were in the ascendency.

The bed was found by Llewellyn I. Price and Theodore E. White of Harvard's Museum of comparative zoology, during a pioneering one-year field trip in this region.

Chief among the two scientists' finds are at least 15 reptile species and genera, believed to be the finest cross-section of South American Triassic life ever made available for scientific study. Nearly 30 complete skeletons are included, as well as many skulls and other significant fragments. At least 15 of the animals are entirely new to science, and their significance can only be guessed at until complete analysis, estimated to take about five years, is made.

Science News Letter, May 1, 1937

IN SCIE

MEDICINE

New Chemical Treatment Succeeds in Meningitis

SUCCESS with a new chemical treatment for dreaded meningitis is reported by Drs. Francis F. Schwentker, Sidney Gelman and Perrin H. Long, of Sydenham Hospital, Baltimore City Health Department, and the Johns Hopkins Hospital, Baltimore. (*Journal, American Medical Association,* April 24)

Ten patients suffering from meningitis, which is an inflammation of the coverings of the brain and spinal cord due to infection, were treated with the chemical. All but one recovered. The chemical used has the long name of para-amino-benzene-sulfonamide.

This and a similar chemical, the red dye named Prontosil, have been used successfully against hemolytic streptococcus infections such as child-bed fever, erysipelas and scarlet fever.

The ten cases reported by the Baltimore physicians were of meningitis caused by injection with a different germ, the meningococcus. Meningitis may be caused by other germs. Cases of streptococcus meningitis have already been successfully treated by this chemical.

In treating the meningitis patients, the chemical was injected into the spinal canal and also under the skin. In a number of cases the organisms disappeared from the spinal fluid after the first treatment. In others, it took several treatments. The one patient in the series who did not recover had been desperately ill when admitted to the hospital and died of pneumonia on the fifth day. His spinal fluid had been free of meningitis germs for three days, indicating that the treatment had probably been effective for the meningitis.

Meningitis due to meningococcus infection is generally treated with an anti-meningococcus serum. The serum treatment has not been entirely satisfactory. In reporting results of the chemical treatment, Dr. Schwentker says that it seems to be as effective as the serum treatment and has the added advantage of being free from the irritating effect due to foreign protein in the serum.

Science News Letter, May 1, 1937

E FIELDS

PALEONTOLOGY

Complex Life Existed Nearly a Billion Years Ago

LIFE in fairly complex form existed on earth nearly a billion years ago. Such is the evidence of a jellyfish fossil found in lower Algonkian rocks at the bottom of the Grand Canyon of Arizona, and reported to *Science* by Dr. C. E. Van Gundy of the University of California.

The fossil consisted of an imprint seven inches in diameter, in fine-grained sandstone. It is remarkable to find a jellyfish fossil in rocks of any age because the extremely unsubstantial flesh of these creatures disappears so quickly. But to find such an impression in rocks that may be anywhere from 600,000 to more than 900,000 years old, where life evidences of any kind are almost unknown, constitutes a scientific record.

Science News Letter, May 1, 1937

PSYCHOLOGY

Time Can Now be Enlarged With a Slow-Motion Camera

USE of the ultra-speed camera to magnify time in much the same way that the microscope magnifies objects in space is urged upon scientists by Drs. Carney Landis, New York Psychiatric Institute, and W. A. Hunt, Connecticut College, in a communication to *Science*, (April 23).

This Alice-in-Wonderland instrument will enlarge the most fleeting instant as much as 200 "diameters." The ordinary slow-motion picture which makes the baseball player or the diver seem to glide gracefully like a rhythmic dancer enlarges time only four times. Such pictures are taken at the rate of about 64 exposures per second and then are projected much more slowly—about 16 to 20 frames per second.

Nowadays the taking of 3,000 exposures per second is perfectly practical. Pictures have already been made by Drs. Landis and Hunt at speeds between 700 and 1,500 frames a second. When these are slowed down to the ordinary projection speed, it is possible to see a great deal that happens much too swiftly for the human eye to take it in without instrumental aid. This enlargement of time is analogous to the work of a microscope that could make a half-inch-long insect appear nine feet long. Drs. Landis and Hunt have applied such time enlargement in study of swift human reactions.

The expression which appears on a man's face when he is startled by the loud sound of a revolver shot looks in an ordinary motion picture like a jerk. Slowed to one fourth normal speed by the slow-motion technique it looks more like a hiccup. The newer camera technique slowing it down to a fiftieth of normal speed reveals it as something like a slow stretchy yawn.

Science News Letter, May 1, 1937

BIOLOGY

Eyes, Ears, Mouth Grown in Tadpole Tail

"A FROG with a head where its tail ought to be." Or to be more meticulously accurate, a frog tadpole with eyes, ears, and mouth actually growing in its tail.

This was the fantastic picture of experimentally induced growth exhibited before the meeting of the National Academy of Sciences by Dr. Oscar E. Schotté of Amherst College.

Dr. Schotté cut the tails off large tadpoles of the common piping frog. The tails started to grow again, as tadpole tails will under such circumstances. Into this regenerating tissue Dr. Schotté then implanted the beginnings of eyes, from frog larvae of an earlier growth stage.

These cup-shaped rudiments of eyes took hold and grew fast. Some influence emanating from them compelled the growing tissue of the tadpole tail to form eye lenses over them.

But that was only the beginning of the story. The new tissues grew on at a great rate. And presently there appeared in them the essential parts of ears and a mouth cavity.

Dr. Schotté's explanation was that the embryonic eyes had a capacity to induce indifferent growing tissue, wherever located, to cooperate in eye formation; following that, there was an extension of the activity until an "upper head field" had been formed, bringing about the ear development; finally the formation of a "lower head field," producing the mouth cavity.

Science News Letter, May 1, 1937

PHYSICS

Cradles of Industry Produce New Products Upon Demand

SOME industries arose with man through the ages and others have been created in recent years through research. The laboratories where searchers after knowledge synthesize new products and new ways of doing things are veritable cradles of industry.

So many of the new things we use and accept as commonplace came not from a lone inventor in a garret but from research workers in modern industrial laboratories or universities. The nitrogen-filled electric lamp, sound motion pictures, synthetic plastics, chemicals galore, new metal alloys, new cleaning powders, and hundreds of other products have arisen out of "being researchful".

One of the pioneers in organizing industrial research was the late Dr. Robert Kennedy Duncan, founder of the industrial fellowship system of the Mellon Institute. He will be remembered when on May 5-9 the new monumental building of that industrial experiment station is dedicated in Pittsburgh.

Everyone who has eaten a "hot dog" has reason to appreciate one advance that took ten years of intensive work and "put cotton shirts on wieners." Now cellulose sausage casings measure 500 miles a day. While they are edible, they do not stick to the sausage and can be used in manufacturing the skinless variety.

Dr. Edward R. Weidlein, director of Mellon Institute, cites the decade of struggle to make wieners' shirts as a lesson in patience. But there are many other less spectacular achievements which range from gas purification with recovery of toluene for war purposes to creating new uses of carbon dioxide in beverages, fire extinguishers and "dry ice."

The research workers, called "fellows," set to work by industries at the Mellon Institute, have improved razor blades, food packing, yeast, cosmetics, dry cleaning, roofings, galvanizing, silverware, steel products, and glassware. They have labored to reduce the menace of smoke in the atmosphere and they have tried to discover the cause and prevention of tooth decay.

Such successes in research have convinced hard-pocketed business men that research pays dividends in dollars as well as better living conditions. Banks recognize that industries without research are not good risks. Research has ceased to be merely a luxury; it is one of civilization's necessities.

Science News Letter, May 1, 1937

BIOLOGY

Life's Beginning Detected By Electrical Means

Breathing Linked With Epilepsy; Protein as Liver Protection; Heart Disease Cause Discussed at Meeting

LIFE'S very beginning can now be detected electrically, it appears from research reported by Drs. J. Reboul, H. B. Friedgood and H. Davis, of Harvard Medical School, at the meeting of the Federation of American Societies for Experimental Biology.

When the egg cell, destined to become a new baby rabbit, bursts from its sac in the mother rabbit's ovary a characteristic electrical change occurs. The Harvard scientists detected this electrical change with a vacuum-tube potentiometer activating a moving-coil galvanometer. The research confirms earlier work reported by Prof. H. S. Burr and associates of Yale University.

While this work was confined to rabbits, the escape of the egg cell from the ovary is the first vital moment for other higher animals including man. Following this escape, called ovulation, the egg travels along a narrow tube until it meets and is fertilized by the male cell and a new life begins.

The scientists reporting did not mention practical applications of the work but if this electrical method of detecting the egg's escape from the ovary could be applied to human mothers, it might give the necessary information for making birth control by the rhythm method a success.

A new egg escapes from the ovary at fairly regular periods. These periods are not regular enough in most women to be depended on, but if the escape of each egg could be determined, the "safe period" might be accurately calculated.

What gives the signal for the egg's escape is not known exactly, but a hormone from the pituitary gland plays a part. The process has now been induced in rabbits, however, by electrically stimulating a definite area of the brain, Drs. H. O. Haterius and A. J. Derbyshire, Jr., of Ohio State University reported. The region is very localized and is situated in the part of the brain called the hypothalamus, to which the pituitary gland is attached. It is probably directly above and behind the optic chiasma, which is where the fibers of the optic nerve cross on the underside of the brain.

Ovulation occurs after stimulation of this particular region of the brain, but Drs. Haterius and Derbyshire stated that there is as yet no evidence that ovulation occurs because of the stimulation.

Control Epilepsy

Epileptic attacks might be prevented if the patient's breathing could be regulated to an even rate of inhaling and exhaling, it appears from research reported by Dr. Frederic A. Gibbs of Harvard Medical School.

This is because the stop and go system which regulates the breathing movements also affects the rate of brain cell activity, Dr. Gibbs explained. The brain cell activity generates rhythmical electrical waves, popularly called brain waves. A record of these brain waves is, except for the time scale, very much like the record of breathing movements. When breathing is slow, the brain waves are slowed, and the reverse.

Measures which correct disturbances of the breathing rate tend to correct and prevent the comparable disturbances in brain wave frequency which occur in epilepsy, Dr. Gibbs said. Conditions which cause sudden changes in breathing rate because of their effect on brain wave frequency bring on epileptic seizures.

Sugar Protects

Eat cheese sandwiches, meat and potatoes or some other form of carbohydrate and protein food with alcoholic drinks to protect against development of fatty livers, is the suggestion to heavy imbibers contained in a report by Drs. J. L. Bollman, Eunice Flock and F. C. Mann of the Mayo Foundation. Better still might be the eating of dextrose, the kind of sugar used in baby foods.

A diet rich in fat and with little carbohydrate and protein food makes the dog's liver excessively fat within four or five weeks, the Mayo scientists found. If the animals on the fatty diets are given, twice daily, enough alcohol to produce mild intoxication, their livers become fatty within a few days.

The same quantities of alcohol do not affect the animals if they are given adequate amounts of carbohydrate and protein food with the fatty diet.

When animals getting the fat and alcohol were given dextrose, less fat was deposited in their livers. The amount of dextrose needed was that required to maintain normal amounts of glycogen in the liver.

Angina Pectoris Cause

Cause of angina pectoris, severe and agonizing heart disorder, is laid to stomach spasms, in a new theory reported by Drs. D. E. Jackson, Russell N. Speckman and Helen L. Jackson of the University of Cincinnati Medical School.

"Angina pectoris is really due to acute, spasmodic, incoordinated contractions of the esophagus (gullet) or stomach or of both simultaneously," Dr. Jackson stated as the view of himself and associates.

As a result of these contractions, he

This Handy Coupon

IS FOR NEW OR RENEWAL SUBSCRIPTIONS

To Science News Letter, 2101 Constitution Avenue, Washington, D. C.

Please ☐ start ☐ renew my subscription to SCIENCE NEWS LETTER for ☐ 1 year, $5 ☐ 2 years, $7

Name.....

Street Address.....

City and State.....

Extra postage charges: 50c a year in Canada; 75c a year in foreign countries.

explained, air or other stomach contents may be entrapped in the esophagus or the heart end of the stomach. Complete rupture of the organ, usually the lower end of the esophagus, has occurred in a considerable number of these cases. X-ray studies often make it possible to see these contractions, bulgings and other abnormal conditions in the esophagus. The location of these abnormalities has a direct bearing, Dr. Jackson said, on the distribution of the pain of which the patient complains.

Nitrites, standby medicines for patients with angina pectoris, relieve these patients by relaxing the smooth muscle of the esophagus or stomach. If the drug, which acts only locally, does not reach these muscle fibers in sufficient concentration, relief may not occur.

Angina pectoris has been one of the unsolved mysteries of medicine for nearly 170 years, Dr. Jackson pointed out. Some 80 different theories have been proposed to explain this painful and often fatal affliction. In presenting his and his associates' theory of the cause of angina, Dr. Jackson relegates the currently accepted theory to the field of demonology because "nothing but a demon can fulfill all the requirements" of this theory as to the cause of the condition.

Prostate Disease Remedy

One of the male sex hormones, testosterone, may be a valuable remedy for prostate gland disease, Dr. Harold P. Rusch, of the University of Wisconsin Medical School, suggested.

The hormone, Dr. Rusch's research showed, may undo some of the damage done in the disease. Recent research has shown that certain changes of the gland tissue are the result of a relative decrease of male hormone in relation to the amount of female hormone present in the male body.

Changing these proportions of male to female hormone by giving female hormone to mice caused changes in their prostate glands similar to those seen in man. In the experiments reported today Dr. Rusch was able to reverse some of the changes by giving male sex hormone to the animals.

Boil Germ Affects Heart

A new menace from a familiar germ, *Staphylococcus aureus,* which causes boils, appears in studies reported by Drs. H. E. Hoff, J. Dingle and L. H. Nahum of Yale University School of Medicine. (*Turn to Page 286*)

BOTANY

NATURE RAMBLINGS
by Frank Thone

Eagle or Dove?

HOW opposite are the scientific and common names of the columbine! Many plants have practically the same names in the scientist's Latin and the layman's English. Violet is *Viola* to the botanist; the common name is directly derived from the Latin one. The same is true of Rose and *Rosa,* Lily and *Lilium,* Cherry and *Cerasus.*

Sometimes the common and scientific names are fairly close translations of each other, as Sunflower and *Helianthus,* Bloodroot and *Sanguinaria,* Cranesbill and *Geranium.* Or at least there will be an agreement of imagination, though the names have no close connection; thus Waterlily and *Nymphaea.*

But the two names of the columbine point in exactly opposite directions. For columbine, in any of the Romance languages, is immediately recognizable as a reference to a dove, whereas the botanical name, *Aquilegia,* comes from *Aquila,* the fierce eagle of the standards of Rome.

Why this paradox? It seems that the botanist and the man in the street (or rather, in the country lane) reached opposite fancies by looking at opposite ends of the flower. The layman looked at the top, and saw in its convoluted arrangement a nest of doves. The botanist looked at the five long spurs, and saw them as the claws of an eagle.

Imagination seems to have been just a trifle stretched in either case. The common name of columbine is certainly more poetic than ornithological: no dove ever built so neat a nest as is figured in the top of the columbine flower; furthermore, the standard number of nestlings for doves is two, not five.

And however good a botanist the donor of the eagle-name *Aquilegia* may have been, he certainly was no ornithologist, either. For the foot of an eagle has four clawed toes, not five; and who ever saw eagle's claws terminating in smooth round little globes full of honey-sweet nectar?

However, probably one should not be too captious. Imagination, whether of Carolus Linnaeus or of plain John Johnson, must be let have its way. Particularly when both furnish us with really beautiful-sounding names for a really beautiful flower.

The commonest American species of columbine has a second seeming paradox in its name. For its full title is *Aquilegia canadensis,* though by far the larger part of its habitat lies in the United States rather than in Canada. But that is only a relic of the days when France held all of North America between the Appalachians and the Rockies, as well as what is now Canada, and the name Canada was extended to cover practically the whole of the Mississippi basin.

Science News Letter, May 1, 1937

Like popcorn, a kind of popping rice has been produced.

New lightships on the coast of Britain are to be equipped with powerful lamps to send out beams visible at ten miles.

It would take nearly 20 tons of steel to equip a 150-acre grain and dairy farm with full equipment and implements of steel, according to one estimate.

RADIO

May 4, 4:15 p. m., E.S.T.

NEW INDUSTRIES FOR OLD—Dr. E. R. Weidlein, Director of the Mellon Institute.

May 11, 4:15 p. m., E.S.T.

THE GRASSHOPPER PLAGUE—Dr. W. R. Walton of the U. S. Bureau of Entomology and Plant Quarantine.

In the Science Service series of radio discussions led by Watson Davis, Director, over the Columbia Broadcasting System.

Nature Camp

For Teachers and Naturalists

A vacation of fruitful, fascinating study that will bring you into a more intimate knowledge of nature and its myriad wonders.

Splendid staff of field naturalists
New comfortable facilities

FIRST CAMP—June 25 to July 16
SECOND CAMP—July 15 to August 5

Picturesquely located in the mountains of Central Pennsylvania, where birds, wild animals, and rare plants abound.
The Nature Camps are a part of the regular Summer Sessions. Undergraduate and graduate credit.

Illustrated booklet on request

Prof. George R. Green, Director of Nature Camps

THE PENNSYLVANIA STATE COLLEGE
STATE COLLEGE, PENNSYLVANIA

PHYSIOLOGY

Body Cells Follow Pattern Seen in the Bees' Honeycomb

By DR. FREDERICK T. LEWIS
Harvard Medical School.
(In presidential address before the American Association of Anatomists at Toronto.)

THE bodies of animals and plants are built of cells which are primarily liquid drops. We begin our existence—turning a deaf ear to Aristotelian and scholastic dialectic—as a spherical drop of liquid. We arise as a cell which has the form of a soap bubble or rain drop. The wonderful globular form of a drop of rain is due to an enveloping skin, which has the properties of a stretched elastic membrane. Robert Boyle, in 1676, warily let fall some drops of oil into rectified spirit supernatant to a solution of niter, thinking to explain the structure of the universe. It was the beginning of physical and chemical studies of the tension which abides in the external layer of the drop, whereby the drop constantly strives to contract and occupy the least possible space. It makes a handsome sphere of the egg yolk or the smaller rabbit's ovum, both of which are single initial cells.

The first drop then divides into a pair, Siamese twinned, joined to one another by a membrane of the same tension as that which covers their exterior. More divisions follow, resulting in a cluster of liquid drops, arranged in accordance with laws established by the Belgian physicist, Plateau, in his masterly study of soap suds (Statique des liquides, 1873). Three films, belonging to three bubbles, meet along every edge: six films, belonging to four bubbles meet at every corner. Hence, as shown by Lord Kelvin, an entire bubble, surrounded by other bubbles of the same size and filling space without interstices, will have 14 facets of contact with its neighbors. If the tension of its walls keeps its surface minimal, it will have eight hexagonal facets and six square facets. Cells of elder pith show a recognizable approach to this ideal pattern. Other cells of plants and animals, more irregular in size and arrangement, likewise present the average of 14 facets, though diverse in outline. There are many pentagonal faces. This outcome is a mathematical necessity for liquid drops in masses when obedient to Plateau's laws.

When tension causes three facets to meet at every corner of the faceted drop (and any other arrangement is unstable) then the total number of sides of the polygons covering a cell will be twelve less than if they were all hexagons. In a cube, three faces meet at every corner; the six squares which bound the cube have twelve sides less than six hexagons. This will apply to every cell with 3-rayed vertices, as, for example, to the 14-hedron with its eight hexagonal and six square faces. It is a corollary of Euler's famous theorem for all polyhedra, invented by the eminent Swiss mathematician in 1752.

Under these conditions the cellular mosaic, forming, for example, the epidermis of a cucumber, or lining the human intestine, will approach the hexangular pattern of honeycomb. As the cells grow and divide, pentagonal and heptagonal elements are introduced, but the average of six sides is maintained along the tube. Whenever an element is pushed out, regardless of its number of sides, and the gap is closed with none but 3-rayed vertices, the mosaic loses just six sides. When, by division, a new cell is added, having any number of sides but making 3-rayed vertices only, the mosaic will gain six sides. Under these stringent mathematical requirements, cells present an array of beautiful patterns, complicated by the development of spaces at the corners and edges, where the tension that makes cells round prompts them to separate most readily. For all these patterns there is a simple hydrostatic basis. Cells are fundamentally liquid drops—gland lobules and vascular units are larger drops—all subject to Plateau's law and to the corollary of Euler's theorem for polyhedra. Thus neatly, in making cells and glands, "nature Geometrizeth and observeth order."

Science News Letter, May 1, 1937

Books

SCIENCE NEWS LETTER will obtain for you any American book or magazine in print. Send check or money order to cover regular retail price ($5 if price is unknown, change to be remitted) and we will pay postage in the United States. When publications are free, send 10c for handling.

Address: Book Department

SCIENCE NEWS LETTER
2101 Constitution Ave. Washington, D. C.

MEDICINE

Mass Attack on Cancer Will Be Made by New Foundation

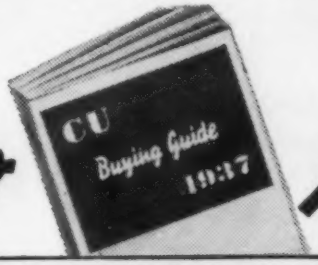
A MASS attack on cancer is now in prospect as a result of the creation of the Finney-Howell Cancer Foundation in Baltimore.

This research foundation, provided for in the will of Dr. George Walker, eminent cancer researcher who was himself a victim of the disease, is unlike most other foundations for scientific research. Instead of perpetuating itself and devoting only the income of the fund for research, the entire principal and income of the foundation is to be spent within ten years.

The foundation is not a cancer institute. It will have no laboratories of its own. Its money, according to the terms of Dr. Walker's will, is to be used to establish a number of fellowships in cancer research, each with an annual stipend of $2,000. The fellowships will be established in whatever laboratories or universities the world over are approved by the board of directors. Wherever a hopeful idea on cancer research and the man to carry it out can be found, the foundation will be ready to give support in the shape of either a fellowship or a grant-in-aid.

Man's fight against cancer will therefore be given the added impetus of a body of scientific shock troops destined for destruction within ten years.

Hope that these shock troops or cancer workers elsewhere will turn the tide of victory over cancer is seen in the fact that Dr. Walker provided for other use for the funds if a successful treatment of the disease is found by these or any other researchers within the ten-year

Now  *ready!*

THE CONSUMERS UNION 1937

BUYING GUIDE

A 240 page handbook

containing ratings of hundreds of products by brand name as "Best Buys," "Also Acceptable," and "Not Acceptable"—

including—

AUTOMOBILES—New
AUTOMOBILES—Used (years and models likely to be good buys)
BLANKETS, wool
BREAD
CANNED FRUITS AND VEGETABLES
CEREALS
COLD & HEADACHE REMEDIES
COSMETICS
DRUGS
ELECTRIC SHAVERS
FLOUR
FOUNTAIN PENS
GASOLINES
HAIR DYES
HOSIERY
CHILDREN'S CLOTHING
MEN'S SUITS, SHIRTS & SOCKS
LIQUORS & WINES
MOTOR OIL
MECHANICAL REFRIGERATORS.
MEN'S, WOMEN'S & CHILDREN'S SHOES
SOAPS
SHAVING SOAPS & CREAMS
ELECTRIC TOASTERS
TOOTH PASTE & POWDERS
TOMATO JUICE
TIRES
VACUUM CLEANERS
VEGETABLE SEEDS

—and many other products.
Get this Buying Guide by mailing coupon now!

Consumers Union Reports for April on:

COLD CREAMS

"... a particularly blatant example of cosmetic quackery," says the American Medical Association's Bureau of Investigation of a certain grossly over-priced cold cream. Find out which brand this is in the April Issue of **Consumers Union Reports.** Fifty-four brands, ranging in price from $1.53 per ounce (dry weight) to 2.6 cents per ounce, are rated.

MEN'S SHIRTS

Twelve brands of men's shirts, ranging from inexpensive mail order brands to popular $2.50 and $3 brands, were subjected to laboratory tests for shrinkage, wearing qualities, etc. The results of this test and of tests on other products are given in this issue.

GARDENING

Special knowledge and skill are required to raise vegetables which compare favorably with market produce. A special article on **Gardening** in this issue helps you to acquire this knowledge; gives valuable hints on soil conditions, and rates several brands of fertilizers.

RADIO SETS

Supplementing a report in the November issue on lower-priced radios, this report rates more than ten popular models ranging in price from $60 to $300. Coming issues will contain reports on automobile radios.

AUTOMOBILES

Concluding the report on 1937 automobiles begun in the March issue (which covered the lower-priced cars), this report gives you automotive engineers' opinions on cars delivering in the $1000-$3000 price range. Ratings are given by name. Labor conditions under which cars are made are also reported.

INDEXED for ready reference and conveniently sized to fit the pocket or handbag, this new 1937 BUYING GUIDE issued by Consumers Union of U. S., Inc., will save you time and money while shopping. It will enable you to choose intelligently among the products offered you, by giving you in compact form and in terms of brand names, the results of laboratory tests of the *specific products* you are considering purchasing.

Every American family should have this handbook. If you want to know which vacuum cleaner tested by expert appliance engineers removed the most dirt from carpets; which bedsheets or shirts are likely to stand laundering best; which cold creams are free from impurities and least expensive; which cold and headache remedies are safe and which are harmful; which liquors are the "Best Buys"; which automobile tires gave the greatest mileage in actual road tests—this GUIDE will tell you, quickly and definitely. You cannot buy the 1937 BUYING GUIDE. But you can get it by becoming a member of Consumers Union.

The material in it is compiled from tests conducted throughout the year by the technical staff and consultants of Consumers Union. Each month these technicians report on standard products; their recommendations are listed *by brand name* as "Best Buys," "Also Acceptable," or "Not Acceptable." These reports come to you in a monthly publication, *Consumers Union Reports.* Your membership in Consumers Union brings you, for the very nominal fee of $3 a year: (1) these *Reports* for a full year; (2) the Annual Buying Guide as described above; (3) a vote in the control of the organization.

Consumers Union has no connection with any manufacturer, advertiser, or other commercial interest. Supported and controlled by its members, there are now close to 35,000 of these throughout the country—a number increasing at the rate of nearly a thousand a week. Consumers Union is organized under the laws of the State of New York as a strictly *non-profit,* membership organization, and its sole function is to provide consumers with accurate *unbiased* information about the things they buy. Its President is Professor Colston E. Warne, of Amherst; its Director, Arthur Kallet, co-author of *100,000,000* Guinea Pigs; and its Technical Supervisor, D. H. Palmer, physicist and author of many papers on consumer problems. On its roster of directors and sponsors are many names well known in scientific, professional and educational fields.

Your membership (see coupon below) will bring you the 1937 BUYING GUIDE and twelve issues of *Consumers Union Reports* as issued monthly throughout the year. Some of the products reported on in the current (April) issue are described at the left. Your membership, however, can begin with any of the previous issues, as listed in the coupon. (Note—An abridged edition of the *Reports* is also published at $1 a year. For information please write.)

MAIL THIS APPLICATION TODAY!

To: CONSUMERS UNION OF U. S., INC.
55 Vandam Street, New York, N. Y.

I hereby apply for membership in Consumers Union. I enclose $3 for one year's membership, $2.50 of which is for a year's subscription to the complete edition of **Consumers Union Reports.** I understand that this fee also entitles me to receive the 1937 Buying Guide.

I agree to keep confidential all material sent to me which is so designated.

SIGNATURE .....

ADDRESS .....

CITY AND STATE.....La.

YOU CAN BEGIN WITH ANY OF THESE ISSUES:

(Please check the issue wanted.)

( ) **SEPT.**—Shoes, Tires, Whiskies, Women's Coats.
( ) **OCT.**—Men's Shirts, Gins, Electric Razors, Dentifrices, Anti-freeze, Solutions.
( ) **NOV.**—Radios, Toasters, Wines, Children's Shoes, Winter Oils.
( ) **DEC.**—Vacuum Cleaners, Fountain Pens, Electric Irons, Blankets, Nose Drops.
( ) **J.-N.-FEB.**—Men's Suits, Cold Remedies, Shaving Creams, Children's Undergarments.
( ) **MAR.**—1937 Autos, Face Powders, Sheets, Flour, Canned Foods.
( ) **APRIL**—Radio Sets, Gardening, Autos, Shirts, Cold Creams.

period. In this event, the remaining funds are to be used for fellowships for study of either streptococcus infections in man or of high blood pressure.

The foundation is named for Dr. J. M. T. Finney, eminent Baltimore surgeon, professor emeritus of surgery in the Johns Hopkins University Medical School, and chief consultant in surgery to the A. E. F., and for Dr. William H. Howell, professor emeritus of physiology in the Johns Hopkins University, former director of the Johns Hopkins School of Hygiene and Public Health, and vice president of the board of trustees of Science Service.

Dr. Finney, chairman of the board of directors, has not yet set the date for the board's first meeting and no definite plans beyond those outlined in Dr. Walker's will have been made. According to the will, however, the work of the foundation must be started within one year. First step will probably be to canvass leaders in cancer research all over the world to find which of them need additional men on their staffs to carry forward promising research already under way.

Science News Letter, May 1, 1937

From Page 279

of the anthropologist—a spreading caliper, anthropometer, and an accurate tape line.

Children are harder to measure than adults, says Dr. Eleanor Hunt, associate anthropometrist in charge of body measurements for the project.

"Children are more flexible, and tend to stretch and wriggle," she finds. "But when they understand the purpose of what we are trying to do, they are usually cooperative. We explain to each child that we are measuring him, or her, in order to make clothing more comfortable to wear. And they understand they are helping to bring this about."

It takes about 20 minutes to measure a child, Dr. Hunt finds. But that does not mean 20 minutes of standing stiffly at attention, or in uncomfortable poses. The children move about a good deal during the measuring, and there is no strain or fatigue.

SO BIG!

For a long time, Miss O'Brien of the Bureau of Home Economics has been saying that American clothes should be made to fit real Americans. The Bureau receives thousands of letters from clothing manufacturers, pattern makers, people who sew clothes at home, and people who buy clothes. For years all these classes have been plaintively asking why sizes of real Americans are not available, so that clothes will fit better.

The clothing industry is still in the experimental stage, as Miss O'Brien sees it. After all, she explains, it is only about a century since clothes were first made in quantities, in the expectation that they would fit unknown individuals who might buy them.

Before that revolutionary idea was launched, clothes had always been either simple draperies or made-to-measure for a given individual, throughout world history. Now an attempt is to be made to bring order out of what is plainly called chaos, for young America, at least.

Science News Letter, May 1, 1937

Bruising a plant leaf or bending it will greatly increase the plant's respiration, experiments show.

"UNVEILING THE UNIVERSE: WHERE WE ARE—WHAT WE ARE," by Norton Wagner. A popular description of Sun, Moon, Earth (with its eleven motions and Theories of its Origin), Planets, Comets, Meteors, Eclipses, Stars, Novae, Nebulae, Atoms, Constellations, Star Charts, Zodiac Signs, Telescopes, Calendar, etc. Rainbow, Aurora Borealis, and Solar Spectrum in colors. With inspiring, highly instructive non-technical text, profusely illustrated with 550 Drawings, Portraits and up-to-date Photographs, all so graphically described that Amateurs, Students, Boy or Girl Scouts, and all Readers, may readily acquire a visual, comprehensive knowledge of the amazing celestial mystery-bodies that speed through the inky-black vacuum of intensely cold infinite space. *No home or library can be complete without this wonderful educative Picture-Book of the Sky.* A marvelous Gift-Book. Full cloth, only $1.00 plus 21c stamps. Free Circular. Order now before edition is exhausted.
RESEARCH PUBLISHERS, Box 163, Scranton, Pa.

From Page 283

This common germ produces a poison which has lately been incriminated as the cause of food poisoning. Now the Yale scientists report that this poison, when injected in certain doses into the veins of rabbits, kills the animals in from one and one-half to 20 minutes. Death in these cases was due to poisoning of the heart muscle with resulting failure of its ability to contract and force blood into the body. The fatal doses were from one drop upward for every 2.2 pounds of body weight of the animal.

Ultraviolet Causes Cataract

The gradual hardening of the eye lens as people grow older with the development of farsightedness and even of cataract in old age is the result of the action on the lens of the small amount of ultraviolet light in daylight and artificial light. This theory and experiments supporting it were reported by Drs. W. E. Burge, G. C. Wickwire, H. W. Neild, and F. M. Hilpert of the University of Illinois.

This theory also accounts for the prevalence of cataracts in the tropics, since the sunlight there is relatively rich in ultraviolet radiation.

Chemical reactions in the eye lens under the influence of ultraviolet light produce hardening or calcification of the lens. As a result, it loses the crystal clearness necessary for vision, as in cataract of old age, and cannot be adjusted for seeing near objects. The latter condition is the farsightedness that makes many people over 40 years need glasses for reading.

Experiments with the lens material from pigs' eyes showed that short ultraviolet waves caused the lens material to become electro-negative. Weak solutions of calcium chloride abolish this electro-negativity and sodium phosphate restores it. Calcium and phosphate are both present in the eye lens, so the Illinois scientists assume that the ultraviolet light ionizes the lens material, particularly the phosphate, which then combines with the calcium to precipitate insoluble calcium phosphate. This produces calcification of the lens.

Science News Letter, May 1, 1937

In a ruined palace at Megiddo, Palestine, archaeologists have unearthed a hoard of Egyptian gold objects, apparently buried there in the fourteenth century B. C. when the region was under the Egyptian Empire, near the time of Israelite invasion.

*First Glances at New Books

Additional Reviews on Page 288

Gardening

FRIDAY-TO-MONDAY GARDENING—Margaret Olthof Goldsmith—*Whittlesey,* 195 p., plates, $2.50. Many of us can spare time for work around the place only on week-ends. Here is a book that tells us how successful landscaping and gardening of a suburban home can be managed on that basis.

Science News Letter, May 1, 1937

Nutrition

VITAMINS IN THEORY AND PRACTICE (2d ed.)—Leslie J. Harris—*Cambridge (Macmillan),* 242 p., illus., $3. New knowledge of vitamins develops so quickly that it is difficult even for scientists to keep up with it. The second edition of this book, appearing just a year after the first, has been revised and enlarged so that it will help the layman keep his knowledge up-to-date.

Science News Letter, May 1, 1937

Aeronautics—Biography

HEROES OF THE AIR (rev. ed.)—Chelsea Fraser — *Crowell,* 786 p., illus., $2.50. The history of modern aviation as traced through the exploits of men who have become heroes of the air. This 15th printing brings the record up to the beginning of 1937.

Science News Letter, May 1, 1937

Juvenile Recreation

PLAY STREETS AND THEIR USE FOR RECREATIONAL PROGRAMS — Edward V. Norton—*A. S. Barnes,* 77 p. $1.

Science News Letter, May 1, 1937

Chemistry

THE CHEMISTRY OF NATURAL PRODUCTS RELATED TO PHENANTHRENE (2nd ed.) L. F. Fieser—*Reinhold,* 456 p., $7. This revision of a widely-used reference book covers the field up to January 1, 1937. Phenanthrene compounds need no introduction to the chemist for they are related to the bile acids, sex hormones, heart poisons, and cancer-causing products.

Science News Letter, May 1, 1937

Entomology

INSECT PEOPLE—Eleanor King and Wellmer Pessels—*Harper,* 63 p., illus., $1.25. A slender book about insects, with text in language simple enough for rather young readers yet vivid enough to hold the attention of adults. Photographs by artists like Chace, Brownell, and the late Cornelia Clarke assure highest quality in the generously supplied illustrations.

Science News Letter, May 1, 1937

Mathematics

MATHEMATICAL SNACK BAR: A COLLECTION OF NOTES AND RESULTS—Norman Alliston—*Chemical Pub. Co. of N. Y.,* 155 p., $3. Special solutions and other interesting bits of mathematical accumulations acquired in 25 years of association with the subject are included. The work was originally published in England.

Science News Letter, May 1, 1937

Engineering

THE GASOLINE AGE: THE STORY OF THE MEN WHO MADE IT—C. B. Glasscock—*Bobbs-Merrill,* 359 p., $3. A swift-moving history of the automobile in America as reflected in the personalities that made it. It is filled with anecdote and highly readable.

Science News Letter, May 1, 1937

Botany

HOUSE PLANTS—Robert Van Tress—*Field Museum,* 36 p., illus., 35c. A score and a half of the better-known and easier-to-raise potted plants, briefly described and well illustrated.

Science News Letter, May 1, 1937

Geography

THE GREAT SMOKY MOUNTAINS—Laura Thornborough—*Crowell,* 147 p., plates, $2. The Great Smokies hold a land of great beauty, of high scientific interest, of a till-yesterday isolated people strangely molded by their environment. Into all this Miss Thornborough gives us glimpses with well-chosen word and skilfully-made photograph, and she shows us foot trails that we may take to see some of it for ourselves, if we will.

Science News Letter, May 1, 1937

Natural History

DESERT NEIGHBORS—Edith M. Patch and Carroll Lane Fenton—*Macmillan,* 170 p. illus., $1.75. Jackrabbit and coyote, horned toad and sidewinder, roadrunner and the woodpecker that digs its nest in a cactus tree—all these and many other ingenious and adaptable creatures that have succeeded in turning the Desert from enemy into friend are here paraded for the delight of even the youngest audience. The triad of virtues already well known for Patch-Fenton books, simplicity in language, strict accuracy in facts, liveliness in illustration is again well maintained.

Science News Letter, May 1, 1937

Astronomy

THE ACADEMY OF SCIENCES ALMANAC FOR THE YEAR 1937—*Maryland Academy of Sciences,* 4 p., planet chart, 10c to members, 25c, to non-members. Obtainable from the Academy, 2724 Charles St., Baltimore, Md.

Science News Letter, May 1, 1937

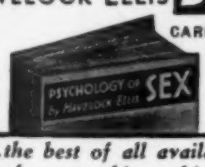
Horticulture

THE GARDEN OF GOURDS—L. H. Bailey—*Macmillan,* 134 p., illus., $2.50. Gourds are fascinating things to grow, but often terribly exasperating to the grower who wants to know just what he is growing. This book carefully takes cucurbit classification to pieces and makes the principal groups intelligible not only to the botanist but to the interested layman. There are a score or more of full-page illustrations in black-and-white, clearly showing critical determination characters.

Science News Letter, May 1, 1937

PSYCHOLOGY OF SEX
by HAVELOCK ELLIS

ONE VOLUME
UNABRIDGED



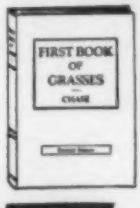
CARL VAN DOREN Says: "The best one-volume treatment of sex in the English language."

"...the best of all available books on this subject."
—HYGEIA (Published by the American Medical Association)

—PARTIAL CONTENTS—
The Art of Love
Substitutes for Sex
Sex in Marriage
Sexual Adjustments
Sexual Variations and Abnormalities
Sex Life of Unmarried Adults
Age and the Sexual Impulse

Price $3.00 (*Postage 15c extra*) 389 Pages
5-DAY MONEY-BACK GUARANTEE
Emerson Books, Inc., Dept. 974-S, 251 W. 19th St., N.Y.C.

VALUABLE *to colleges, libraries, high schools, teachers, students, allergists, farmers, ranchmen.*



"First Book of Grasses" (Revised Edition) by Agnes Chase, Senior Agrostologist, Department of Agriculture. 94 illustrations, 138 pages, names diacritically marked. No other book can take the place of this primer. Price $1.25 postpaid.

"Texas Grasses" by W. A. Silveus describes 550 species, 420 photos and drawings 5x7. Glossary and Latin terms diacritically marked. Subject made easy. Price $5.50 postpaid.

These Two Books and the **"Manual of Grasses"** by A. S. Hitchcock will fully equip any person or library for the study of grasses. This Manual is a very valuable work. In "Texas Grasses" the descriptions are more in detail and illustrations larger than in the Manual. Ask to see these works at your library.

W. A. SILVEUS, Publisher
832 Cambridge Oval, San Antonio, Texas

•First Glances at New Books

Additional Reviews on Page 287

Medicine

THE CONTROL OF GOITER: THE THYROID IN HEALTH AND DISEASE — J. Thompson Stevens—*Barnes,* 209 p., illus., $2.50. Much information about an important gland is presented in simple, easily read style. The author is chairman of the advisory board of the New York Goiter Committee.

Science News Letter, May 1, 1937

History

ROMAN BRITAIN AND THE ENGLISH SETTLEMENTS—R. G. Collingwood and J. N. L. Myres—*Oxford,* 515 p., maps, $5. A comprehensive history which analyzes political motives of the Caesars in Britain, fits archaeological discoveries into the historic narrative, and shows how British geography and social and economic conditions were shaped by Roman dominion, only to be reshaped in the Anglo-Saxon conquest. What survived from the Roman era is a particularly interesting problem, on which historians are revising their once confident views considerably.

Science News Letter, May 1, 1937

Physics

ATOMS, MEN AND STARS—Rogers D. Rusk—*Knopf,* 298 p., $3. An adequate and understandingly written survey of recent developments in physical science related to philosophy and life in general. The author is associate professor of physics at Mount Holyoke College. He brings together work in different fields and allows the reader to see what science is doing and where it may be going.

Science News Letter, May 1, 1937

Medicine

ON YOUR GUARD! THE PREVENTION AND TREATMENT OF SEX DISEASES—Carl Warren—*Emerson,* 160 p., $1. Written with a frankness that would shock an earlier generation, this book gives specific, practical information on syphilis and gonorrhea, their symptoms, treatment and prevention.

Science News Letter, May 1, 1937

Horticulture

WINE GRAPES, THEIR SELECTION, CULTIVATION AND ENJOYMENT—Philip M. Wagner—*Harcourt, Brace,* 298 p., plates, $2.50. The author's thesis is that Americans, in many parts of our country, could profitably make their own table wines from home-grown grapes, as continental Europeans do. To them he brings the fruits of his long learning and experience with wine grapes, discourses on pure *vinifera* types and the many hybrids, tells how to propagate and prune, districts the United States and suggests best varieties for each district. He does not tell how to make wine, but he does give adequate guidance for every step of the way to the very edge of the winepress.

Science News Letter, May 1, 1937

Horticulture

AS ONE GARDENER TO ANOTHER — Lucy M. Ellis—*Crowell,* 279 p., $2.50. The author weaves her own gardening experiences into her book; which gives a comforting atmosphere of assurance that "this and this have been actually tried, and they came out all right."

Science News Letter, May 1, 1937

Genetics

ANIMAL BREEDING PLANS — Jay L. Lush—*Collegiate,* 350 p., $3. A textbook on animal breeding that will be very effective in helping college students to get more out of courses in both theoretical and applied genetics, and will also be highly useful on the reference shelf of the manager of herds and flocks where really scientific handling is being attempted.

Science News Letter, May 1, 1937

Physics

THE THEORY OF METALS, BASED ON AN ESSAY AWARDED THE ADAMS PRIZE IN THE UNIVERSITY OF CAMBRIDGE, 1931-1932—A. H. Wilson—*Cambridge (Macmillan),* 272 p., $5. The electron theory of metals is presented in the light of the developments of the last ten years.

Science News Letter, May 1, 1937

Zoology

A BEAST BOOK FOR THE POCKET, THE VERTEBRATES OF BRITAIN, WILD AND DOMESTIC OTHER THAN BIRDS AND FISHES—Edmund Sanders—*Oxford,* 378 p., col. plates., $3.

Science News Letter, May 1, 1937

Gynecology

CHILDLESS: A STUDY OF STERILITY, ITS CAUSES AND TREATMENT—Sam Gordon Berkow—*Lee Furman,* 307 p., illus., $3. As a basis for understanding the causes and treatment of sterility, the author of this book for the layman describes in some detail the process of reproduction and points out the various conditions which may interfere with the process.

Science News Letter, May 1, 1937

Folk Music

A SONG CATCHER IN SOUTHERN MOUNTAINS—Dorothy Scarborough—*Columbia Univ. Press.* 476 p., $4.50. Early settlers in the mountains of Virginia and North Carolina brought with them their songs—English, Irish and Scotch; and for the hundreds of years these mountaineers have lived, isolated from the bustling eastern seaboard, these folk songs have been handed down from generation to generation. Miss Scarborough has written them down for us—words and music.

Science News Letter, May 1, 1937

Aviation

THE CONQUEST OF THE STRATOSPHERE —Chas. G. Philp—*Pitman,* 205 p., $2.50. A British book tracing the record of modern stratosphere flights and the physical characteristics of that high-overhead world which someday may be the path of long distance airplane flights. The information on the Russian ascensions may be new to many American readers.

Science News Letter, May 1, 1937

Chemistry

ELEMENTARY CHEMISTRY—Douglas G. Hill, John H. Saylor, Warren C. Vosburgh and Robert N. Wilson—*Holt,* 473 p., $2.50. A Duke University text which strives to keep general chemistry up with the advancing thought of physics and physical chemistry. Emphasis is thus placed somewhat on a clear presentation of modern electrolyte theory and on the latest theory of atomic structure.

Science News Letter, May 1, 1937

Agronomy

SOILS OF IOWA—P. E. Brown — *Iowa Agricultural Experiment Station,* 265 p., illus., 50c. Ask any patriotic Iowan what kinds of soils there are in his state, and he will answer proudly (and correctly), "Good soils!" But agronomists and dirt farmers alike need to know more. Telling more about Iowa soils is the business of this publication, and it does so capably and thoroughly.

Science News Letter, May 1, 1937

Engineering

THE AMERICAN SOCIETY OF HEATING AND VENTILATING ENGINEERS GUIDE, 1937. Vol. 15—*Amer. Soc. Heating & Ventilating Engineers,* 1128 p., illus., $5.

Science News Letter, May 1, 1937